

Kerr Dam Section 216 Study – Status 2/14/14

Background: The US Army Corps of Engineers (USACE) completed John H Kerr Dam in 1953. In 1996, USACE Wilmington District completed an Initial Appraisal Report that indicated that a Section 216 Study was needed to evaluate the environmental impacts of Kerr Dam on downstream ecosystems. A Section 216 Study is authorized by Congress to “review the operation of projects ... and to report thereon to Congress with recommendations on the advisability of modifying the structures or their operation, and for improving the quality of the environment in the overall public interest.” In 2000, the US Congress directed USACE to conduct a Section 216 Study at Kerr Dam. USACE completed a Reconnaissance Report in May 2001. That document states on page 19, “Resource concerns for the lower Roanoke River center on the need for restoration and enhancement of extensive swamp and floodplain forest and fisheries through improvements in the hydrologic regime and water quality. Ecosystem restoration is within the federal interest and is a high priority output.” Since 2001, USACE has been collaborating with the NC Division of Water Resources and many other stakeholders to complete the 216 Study and its associated NEPA compliance documentation.

New Developments: On Friday, 24 January 2014, USACE advised a meeting of stakeholders in the Wilmington District Office as follows:

- Following the evaluation of several alternatives, only two remain to be considered. These are Future Without Project (FWOP) which is a synonym for the status quo, and Quasi-Run-of-River (QRR) which involves the absence of reservoir elevation triggers to initiate water release volumes and, when the reservoir is above the guide curve, a commitment to release volumes of water (in weekly declarations) equivalent to the previous week’s input in order to maintain reservoir levels as close as possible to the guide curve. However, this determination of two alternatives is not official until an Alternative Formulation Briefing (AFB) occurs between USACE, the State of NC, and the stakeholders. No AFB has been scheduled.
- QRR provides significant environmental benefits over FWOP.¹
- The evaluation of QRR and FWOP will be made only on the basis of net environmental benefits (Habitat Units). Other costs and benefits may be illustrated, but will not determine the final decision (but see the following point about agriculture).
- The Commonwealth of Virginia, which had been a founding sponsor of this 216, withdrew after 14 years, and only the State of NC remains as an active co-funder of the project. NC has advised USACE that their financial support for the project would not continue beyond funds already disbursed to USACE. Wilmington District believes they have enough funds to work through 2014.
- USACE HQ has advised Wilmington District that without strong support from NC, they may not be able to finish the project.
- Most landowners with croplands impacted by QRR will need to sign off on the impacts.

Benefits and Costs: The following constitute the stakeholders’ understanding of environmental benefits and cropland costs of the QRR alternative:²

¹ QRR therefore complies with the Congressional intent in authorizing this Section 216 Study and with the finding of the Reconnaissance Report.

² Land-use acreages are from USDA Cropland Inventory 2012, flood footprints are from USACE HEC_RES, and flow statistics are from HydroLogics RRBROM.

Flows in General: Under FWOP, flows equal or exceed 20,000 CFS 14% of the time. Under QRR, that number drops to 7%. Under FWOP, flows reach 35,000 CFS 1% of the time. Under QRR, that number rises to 3%. That is the fundamental trade-off. The following enumerate its impacts.

Agriculture: About 4,700 acres of cropland in the Lower Roanoke River floodplain (LRR) are flooded by releases at or below 35,000 CFS. 2,260 of these acres are flooded by releases of 20,000 cfs or less, and with implementation of the QRR, these will be flooded less often than they are now. The QRR option is expected to flood 2,440 acres of cropland more often than they are flooded now. Some of this land is owned by the NC Wildlife Resources Commission (NC WRC) and private hunt clubs and is planted in food crops for wildlife. Some is former wetlands already identified by the NC Division of Coastal Management for wetland restoration. USACE (1/8/13) estimates only 1,100 acres of private cropland will be flooded more often. We estimate that about 60 landowners own this impacted land. Of the 1,100 acres of private cropland flooded at 35,000 CFS, USACE estimates one farmer owns 250 acres. That farmer has stated strong support for the QRR (McLennan 5/6/08). The remaining farmers average 14 acres of impacted land each, spread out along the lower (currently wettest) margins of their fields.

Forest and Wetlands: There are about 100,000 acres of forests and wetlands that flood at or below 35,000 CFS (about 100 times as much private cropland as is impacted by QRR). Virtually all of it is hunted. About 35,000 acres are privately owned, often by the same landowners with croplands in the same flood zone. The remainder (65,000 acres) is in conservation land owned by the WRC, US Fish and Wildlife Service, conservation organizations, and private hunt clubs. QRR will strongly benefit habitat values in all 100,000 acres by reducing the duration of growing season floods.³ For example, the median growing season flood duration in the FWOP is 10 days, and with QRR, it is 5 days – half as long, and the same as it would be if the dam did not regulate the river. The maximum growing season duration of a flood in this zone is 149 days in the FWOP and 59 days in the QRR, a 60% reduction. Reducing flood duration will also enhance timber values on privately held forestlands over the long term by some undetermined amount. Finally, reducing the duration of floods by about 50% will reduce the frequency and severity of bank collapse (Dr. Cliff Hupp, USGS, personal communication).

Reservoir Recreation: When Kerr Reservoir reaches 302 feet above MSL, public campsites and beaches begin to close. At 304 feet, boat ramps begin to close. At 305 feet, most shore-based recreation facilities are closed, and marinas begin to shut down (Michael Womack, Kerr Operations Project Manager). Under the FWOP option, 305 feet will be reached 6% of the time. Under the QRR option, that will drop to 1% of the time, an 83% improvement. Cancellation of a single bass tournament can cost the local economy \$3 million - \$4 million.

Hunting and Fishing: A 2008 report by Research Triangle Institute evaluated an option similar to QRR but with fewer environmental benefits. By flooding lakeshores and forestland for the length of the river for shorter durations, this option produced an estimated annual benefit for hunting of \$218,000 and for fishing of \$3,350,000 for a total additional annual value to these sports of \$3,568,000. QRR is expected to produce better results than these.

Water Quality: A recent report by USGS (Garcia 2012) evaluated the same option and found that decreasing the duration of floods will substantially improve dissolved oxygen levels in floodplain and in-stream waters downstream. QRR will reduce the duration of floods by a larger margin than the option evaluated.

³ The growing season is from March – October. Several studies, in addition to those conducted by USACE during the 216 Study, support the existence and importance of this benefit.